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ABSTRACT

Responding to concerns of the National Council of Teachers of English (NCTE) Task Force on Excellence in Education that current uses of computers in teaching English language arts may undercut rather than advance excellence, this report, prepared by the NCTE Committee on Instructional Technology, summarizes the committee's thoughts and recommendations on the issue raised. After introducing the issue, the report identifies and discusses five concerns of the committee: (1) the use of computers in teaching composing and edition; (2) computer programs with responsive interaction in reading; (3) qualifications of teachers of word processing; (4) specifying technology in today's K-12 classroom; and (5) communication skills needed in an information society. The report concludes with the committee's recommendations for action: (1) develop a model teacher-training program to help schools and teachers realize the promise of excellence in teaching English through intelligent use of computers; (2) develop a computer-based communication network to serve as a new medium for teacher and student writing, and as a communication channel for council business; (3) initiate and support a "Schools Recognition Program for Exemplary Use of Instructional Technology in the Teaching of English"; (4) begin a new era of open cooperation and collaboration with business; and (5) become a force advocating greater computer access by English teachers and students. Appendixes provide a discussion of computers and the stages of writing and a decision guide for technology in the classroom. (HOD)

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Leadership in Literacy for the Information Age

A Report of the Committee on Instructional Technology
National Council of Teachers of English
January 10, 1985

Executive Summary

This report responds to concerns of the NCTE Task Force on Excellence in Education that current uses of computers in teaching English language arts may undercut rather than advance excellence. The Task Force recommended in its Action No. 24 that the NCTE Executive Committee support a study of this issue by the Instructional Technology Committee.

The Instructional Technology Committee, in this report of its study, concludes that Council support should be given now to urgently needed actions to achieve excellence. Sufficient evidence already exists that adequate computer resources, intelligently employed by teachers, can improve writing and teaching.

The potential of computers in helping teachers to achieve excellence in teaching writing and language arts, indeed, has not been realized. Reasons for this are discussed, as well as the contributions that newer computer applications can make toward excellence. Schools and teachers still are responsible for achieving this excellence by using powerful tools and powerful ideas effectively and proficiently.

The information age is here to stay and is redefining our concept of literacy. The computer is not only a powerful composing and teaching tool, but also an important new medium for communication and literacy. As educational leaders, we need to begin moving our constituency as rapidly as we can toward literacy with computer media and toward competence in using computers well in writing and in teaching.

To this end, the Committee's primary recommendation for 1985 is that the Executive Committee support the development of a model teacher-training program. This program should help schools and teachers realize the promise of excellence in teaching English language arts through intelligent use of computer tools and computer media. This recommendation for action, along with four others in this report, highlight NCTE's important responsibility and urgent challenge to provide leadership in literacy for the information age.

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Leadership in Literacy for the Information Age

A Report of the Committee on Instructional Technology
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January 10, 1985

William R. Oates, Editor
and Committee Chair

Contributing members:
Anne Auten
Robert Caldwell
Shirley Keran
Roddy McGinnis
Robert Shostak
Irene Thomas

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Introduction

This report responds to concerns of the NCTE Task Force on Excellence in Education that current uses of computers in teaching English language arts may undercut rather than advance excellence. Action No. 24 of the Task Force recommended the following:

> The Executive Committee should assign certain critical tasks with respect to the uses of Technology in the English Language Arts (K-College) to the Committee on Instructional Technology, and support its investigation, and ask it to report back within the year.

The Committee on Instructional Technology believes that the need for action on issues raised by the Task Force are of such urgency that it has expedited this study and report, which concludes with recommendations for appropriate action. The format of the report provides sections addressing the specific priority concerns identified by the Task Force. These sections follow this introduction and come before the recommendations for action.

In its Action No. 24, the Task Force introduced its priority concerns with the following observations:

> Rapidly changing conditions vis a vis the uses of microcomputers in schools, parental and administrative pressures, and widespread misinformation seem to create conditions in which the new technology is being employed less to advance excellence than to undercut it. The Task Force is alarmed that schools seem more enchanted with using computers for random drill and practice, testing, instructional management, and practice of low-level skills, rather than for composing, thought processes, text analysis, and creative uses of language.
>
> Some Task Force members believe that, if properly employed, the microcomputer might have a greater impact on English teaching than on mathematics.

The Committee agrees with the Task Force on both counts: 1) The potential of computers in teaching writing and language arts has not been realized, and 2) the positive impact of computers in teaching English language arts may be immense and possibly revolutionary.

The Committee shall not attempt to defend weak computerized lessons or poor instructional applications by self-taught teachers in schools with inadequate resources. This, indeed, is the ragtag way in which this revolution recently began. There is cause for concern that it mature quickly, but no cause for alarm.

The use of microcomputers in the classroom is in its infancy. To suggest that they are already being misused is premature. The percentage of English teachers who have access to computers needs to increase dramatically before we can state definitively how they are being used. Moreover, we can't expect teachers who have computers to do much more than testing or drill and practice if that is all the software available to them.

The earliest computer-based education products to appear on the market were limited to the types of applications that concern the Task Force. There has been no real "enchantment" with them; they simply were the easiest to program, evaluate, and manage. In this sense they resemble practice workbooks -- the easiest kinds of books to write, evaluate, and manage. Enlightened teachers, however, recognize the benefits and limitations of both items. Their fascination with a workbook on the screen, while attractive and seemingly innovative at first, has faded as teachers have grown more knowledgeable about computers and their possibilities. Those who have recently attended workshops on computer applications in language arts have found that the participants tend to dismiss these early programs as having a genuine impact on the curriculum, and the marketplace shows that sales of such programs are down.

On the other hand, we do not wish to imply that no place exists for quality drill and practice programs in our curriculum. As long as some time and attention is paid to teaching the writing conventions of English, there will be cogent arguments for using the computer as a tool toward those ends. Quality tutorial/drill programs are those that teach skills in a highly responsive, individualized, insightful manner, using the full capabilities of the computer and in a manner that improves upon the printed text. Such programs do exist. They are even sought out by enlightened teachers and will survive the competitive marketplace. These are the same quality programs that will get high marks on our NCTE Guidelines for Review and Evaluation of English Language Arts Software.

As one wag put it, however, the future is a lot more promising than the past. We shall now examine the present and future in terms of the priority concerns of the Task Force. Action No. 24 listed them as follows:

1. Uses of the micro in teaching the composing processes (planning, drafting, editing, publishing).

2. The uses of computer programs in editing (Writers' Workshop, et al).

3. The uses of computer programs to stimulate interactive responses for reading -- nonfiction as well as fiction.

4. The qualifications of the instructor who teaches word processing within required "computer literacy" courses. (Are math and business education teachers competent?)

5. Recommended specifications for technology in today's K-12 classroom.

6. The communication skills needed for competence in an information society.

The Committee could add six related concerns that are common arguments against using computers to teach English language arts, and especially writing. These are:

7. Word processing is difficult to learn and takes time away from writing instruction.

8. There are not enough computers currently in schools to make word processing a reality.

9. Computer utilization is difficult to incorporate into the traditional classroom setting.

10. Editing checkers may lead to the institutionalization of sterilized, impersonal writing styles.

11. Spelling checkers may produce a generation of non-spellers, the way calculators may have reduced abilities to perform calculation.

12. The efficiency of editing aids may encourage students to focus on superficial writing features rather than on content.

The Committee believes that the following sections and recommendations are responsive to these concerns. In addressing the priority concerns of the Task Force, items 1 and 2 have been joined because composing and editing are so intimately related, especially so where computer writing tools are employed.

Use of Computers in Teaching Composing and Editing

Word processing and text editing programs are positive and powerful tools for learning and practicing the communicative act. They also support the most tested and current approach to instruction -- the writing process model. It is in the areas of the composing process that the microcomputer could indeed have a greater impact on English teaching than on mathematics.

Both the teaching and learning publics and the marketplace are currently responding to this possibility. The evidence is clear: Most of the computer sessions at the 1984 NCTE convention were geared to composing with the computer; countless articles on word processing have been published in the past year in both commercial and professional journals; several journals, including Electronic Learning, have devoted entire issues to word processing; and research being carried out at universities such as Columbia Teachers College is focused on the impact of composing by computer.

Meanwhile the marketplace is rapidly responding: Several student-oriented word processors have appeared in the last year, and comprehensive writing packages that aid the user from idea-getting to proofreading are either available or under development. Examples of such packages carry the names of WANDAH, THE WRITING WORKSHOP, THE WRITE STEPS, and QUILL. Also, several well-known authors are under contract to write "generic" books on using word processors in the writing curriculum.

In sum, a movement is clearly under way.

This is not by accident. Anyone who has composed on a word processor knows that it is very possible that the computer used with this kind of software in this way could revolutionize our writing curriculum. We have already heard countless anecdotal reports about how reluctant writers have suddenly become eager writers, how children have become willing to talk about their writing and share it as they begin to internalize writing as a process. They now see it as a living cycle of planning, drafting, and revising -- a process made substantially easier by a good word processor used under the direction of a creative, well-trained teacher.

Computer use in specific stages of writing are discussed in in detail in Appendix A -- Computers and the Stages of Writing. While more research is needed, anecdotal reports are already beginning to be substantiated by empirical research. WANDAH, developed at UCLA, is already being used successfully in college settings. More English teachers need to gain personal mastery of these powerful writing tools before they can be expected to achieve excellence with them in teaching.

Computer Programs with Responsive Interaction in Reading

Within the past year, a number of software programs have appeared that allow individuals to use computers to become participants in interactive stories and adventures. Most of these programs lead learners through individually tailored sequences of events designed to help them empathize with the characters and with the action that is taking place. The participation of noted authors attests to the legitimacy of this new medium for literary production and enjoyment. One publisher with an emphasis on interactive science fiction has contracts with Ray Bradbury, Arthur C. Clarke, Michael Crichton, Robert Heinlein, and others.

This interactive approach also has been usefully employed instructionally with nonfiction. One of the earliest examples was a responsive narrative on English Poor Law History in which the reader played the role of Herb the Serf. This type of interactive reading can have a variety of benefits for stimulating creativity and high-order thinking. Three will be explored:

1. Development of First-Person Participation

The first benefit to be derived from interactive reading is that readers can become first-person participants in the story. They can exert a certain degree of control over a specialized environment that has been created for them in a way that is not possible in a one-way medium such as television. One genre of books has appeared recently that presents a format allowing readers to choose various endings or various paths through the book. However, these books are limited in their power to offer the same number or types of alternatives that a computer program can. A computer's speed in branching to these alternatives maintains the continuity of the story. In addition, a computer can provide graphics, pictures, and even animation to make the story come alive.

Learners also can assume identities in interactive stories and have power to influence the events of the story. For many learners, particularly learning disabled students, this type of story can provide an alternative mode for reading and enjoying literature. Interactive nonfiction has the potential to make historical events come to life and to allow learners to carry on conversations with famous individuals, gaining insights into feelings and thoughts that would be difficult to achieve in a textbook or even a film.

2. Stimulating Creativity

Many interactive fiction programs allow learners to express a large degree of creativity in using the programs. Situations can range from choosing one's own ending to a story to actually creating one's own adventure. The best programs are those that allow the user to participate in some degree of content sequencing and inductive theory building. Learners create situations, events, characters, and action. The real value of such programs is not the result of the user's effort but the process of using language to define and enrich the story. Language in these programs becomes the instrument with which the learner controls the story.

3. Solving Problems

Many programs stimulate a certain degree of problem solving and theory building that cannot be developed in any other medium. Computer programs can prompt learners in both prewriting and revision processes and can even react to certain kinds of user responses in an intelligent way. Certainly programs can be developed that employ elements of generative rhetoric, i.e., the computer can aid the learner in expanding ideas and enriching syntax using well thought out prompts, advance organizers, and structured formats. The next generation of software for English language arts may well integrate writing and editing aids into the creative and responsive component of interactive reading.

Qualifications for Teachers of Word Processing

Teaching word processing per se is different from teaching the art of writing. It primarily involves teaching the mechanical operations and keystrokes for using a particular word processing program. A powerful tool is then accessible to students for their use in writing.

Questioning the competence of math or business teachers to teach a specific word processing program is as inappropriate as questioning the capability of the same teachers to teach typing or data processing. We should encourage the cooperation of math, business, and English teachers in teaching word processing across the curriculum, and as a first-level skill to facilitate writing.

Just as there has developed a course called "personal typing" in our high schools, a similar course in word processing would be appropriate. Whoever has the time to teach any word processing program should do it. It's that important. Students can always adapt to using a different program in English class or in the lab if they have to. The point is that once they experience the tool, both English teachers and their students are freed to consider the larger issues of purpose, audience, content, and style. Too many English teachers get bogged down in teaching a particular word processor when their time would be better spent exploring with their students the applications of word processing to composing.

Specifying Technology in Today's K-12 Classroom

To affirm that each student -- teacher, classroom, school, school district -- is indeed unique, is to suggest the impossibility of setting forth generalizable criteria for the procurement and use of computer hardware and software. We can, however, propose a "fact-finding" set of seven questions for teachers and administrators to consider before making costly decisions. Such a guide is included in Appendix B -- Decision Guide for Technology in the Classroom.

The questions begin by assessing student needs from which an extrapolation of hardware and software requirements can be inferred. They offer the benefit of involving several persons in the decision process. The questions are based on three assumptions:

Assumption #1: That the rationale for integrating word processing into the curriculum is understood and accepted by staff and that implementation is a next step.

Assumption #2: That the goal is for students to be able to learn to compose using word processing. In other words, word processing is not viewed as an end unto itself.

Assumption #3: That the mechanical skills to be learned are twofold: keyboarding and the operation of a word processing program.

Communication Skills Needed in an Information Society

People use communication fundamentally in two ways: 1) to acquire information about the world (or some fictional world), and 2) as a means to disseminate their own messages or feelings. In today's information society, new channels are available for both the acquisition and dissemination of information.

The new skills people need for competence in this information society are those that permit them to gain information and to express themselves through computer-based communication media. The goal is to enable people to take advantage of this new channel through which they may know the world and add to its literacy. Everyone deserves to be able to participate in the writing, reading and learning that is occurring through new communication technologies.

While such participation requires some new knowledge and a few new skills, this in no way diminishes the importance of the basic communication skills of sound reasoning, effective organizing, and writing with clarity and force. Yet the danger of this truism is that some who wish to ignore the information society use it to argue that nothing new need be added. This conclusion is false.

Books, films, computer-based communication media, and others all require effective language use. A rich vocabulary and facility in expressing ideas remain essential. A few new things also need to be learned, however, for people to have competence in an information society. These things are not really so numerous or unusual for today's world. They simply need to be accepted by English teachers.

Let's look at specific needs using the two-fold hierarchy suggested earlier for ways people use communication: for acquisition and for dissemination.

Consider acquisition first. Tremendous amounts of knowledge and records of our civilization are being stored in computer-based databanks and information services. Writers need to know how to gather and evaluate information that is available through such means. First of all, people need to be cognizant of computer-based information and communication media such as Dialog, BRS, CompuServe, The Source, Viewtron, and others. They should know the nature of the communications on such systems and how they could participate and learn from such systems. Experience is the best teacher in this regard, so people need to use such information systems as part of their educational experience.

For dissemination, people need to know how to use computer-based communication systems well enough to put their own messages and writings into such systems. People need to have typing skills and experience in composing with a word processor. They also need to know how groups have coalesced for informal communication using such systems, how messages and articles get indexed and stored, and about opportunities in on-line publishing.

Learning these things also requires learning to use computers, to run software, and to dial into communication networks. While these modest technical skills should not be the grist of English classes, they would be easily picked up by students if English teachers themselves became more competent in our information society. English teachers need to be role models in showing students how literacy skills are used advantageously in computer-based media as well as in other media.

RECOMMENDATIONS FOR ACTION

The information age is here to stay and is redefining our concept of literacy. The computer is not only a powerful composing and teaching tool, but also an important new medium for communication and literacy. As educational leaders, we need to begin moving our constituency as rapidly as we can toward literacy with computer media and toward competence in using computers well in writing and in teaching. Excellence does not come without leadership. The following recommendations for action highlight NCTE's important responsibility and urgent challenge to provide leadership in literacy for the information age.

The Committee on Instructional Technology stands ready to assist the Council in planning and executing these recommended actions:

1. Develop a model teacher-training program to help schools and teachers realize the promise of excellence in teaching English language arts through intelligent use of computer tools and computer media.

2. Develop or join a computer-based communication network to serve as a new medium for teacher and student writing, a communication channel for council business or the informal sharing of ideas or even software, a means to motivate English teachers to become participants in the information society, and as a signal statement that NCTE believes that we must participate in the age in which we live.

3. Initiate and support a "Schools Recognition Program for Exemplary Use of Instructional Technology in the Teaching of English." Besides identifying exemplary school programs, this recognition program would emphasize responsibility at the institutional level for sound integration of technology into the curriculum. Too much responsibility has been left on the shoulders of a few, especially dedicated teachers. For excellence to be broadly achieved, instructional technology needs care and feeding at the institutional level, integration into the school's curriculum, and programmatic support. Some schools are doing this better than others; we should recognize them and disseminate what they are doing.

4. Take steps to begin a new era of open cooperation and collaboration with business, especially businesses involved with instructional technology. Two first steps might be:

   a) Allow, even encourage, commercial producers of software to present their products at sessions of professional meetings. The old hard-line approach of keeping the profession "untainted" is no longer appropriate for this age. Teachers are uninformed, in part, because they have no opportunity to see and experience what is now commercially available. The practices of free samples and school visits we have enjoyed with book publishers are less appropriate with computer media. And it is naive to assume that teachers aren't able to make their own evaluations in the context of the marketplace.

   b) Set up and coordinate "School/Business Cooperative Projects in Computer-based Education in English." This could be a match-making service between schools seeking resouces and support for research or special projects with instructional technology and businesses seeking school environments for pilot testing or demonstration programs for their educational products. The assumption of a coordinating role by NCTE could help to assure excellence in such projects and objective validity in research and reports of the projects.

5. Become a force advocating greater computer access by English teachers and students in schools. Two first steps might be:

   a) Develop public relations guidelines that would help affiliates and schools communicate to key publics the urgency of the need for better computer access for English classes. Include tips for garnering additional funding for computer writing labs from parents groups, local business, and government sources.

   b) Develop a "Right to Computer Access" document similar to other position papers NCTE has developed in the past.

APPENDIX A

Computers and the Stages of Writing

Stage One -- Planning

Even without special programs for the planning of writing, writers can use basic text editing functions for generating and capturing ideas and exploring their thinking without limits. Because, as Stephen Marcus of California's South Coast Writing Project says, "words on a screen dance in light" rather than being frozen into semi-permanency, the computer writer is encouraged to experiment, to change his mind, to follow an unexpected line of inquiry.

All of the prewriting methods fostered by the National Writing Project -- clustering, brainstorming, free writing, invisible writing, and mapping -- are easier to do on a computer screen than on paper. Programs already are being developed to expedite these processes through appropriate screen prompts, ones which individualize instruction in ways that save enormous amounts of teachers' time. Computer programs that engage students in shared dialogs as part of the inquiry stage of planning have already shown the potential power of the computer as an aid to fruitful collaboration. Research on writing competence, by the way, showed long ago that students who plan more are better writers than those who don't.

Stage Two -- Drafting

Again, the ease with which changes can be made even as writing progresses encourages students to view their work as a stage of an ongoing process. Student writers composing on computers remain open to sudden insights, major reorganization using "move" commands, and major additions and deletions without the obstacles of retyping an entire piece of work. We will likely find the higher order thinking skills that we want in students more in evidence among those who have learned to compose with word processing tools and related support programs such as those mentioned above.

Stage Three - Revising/Editing/Proofreading

While even the most sophisticated mechanics and style checkers cannot judge content and other high level writing features, the aids they do provide can serve to free the teacher for real teaching -- of higher order thinking skills (HOTS, as Rex Brown calls them). In the future, teachers freed from teaching and evaluating mechanics and also trained to focus on substantial issues may truly represent our best educational resources.

Editing aids available to writers through programs such as WANDAH will, whenever writers desire, check spelling, diction, sentence and paragraph lengths, and other measurable features of style. Such well-designed programs encourage students to review their sentence structure as well as direct them back to their original plan to see if major ideas were omitted or changed. Such programs also will remind a student of the audience and purpose he indicated during the planning stage. The best of these programs allow teachers to modify the databases against which style features are checked. They also do not force judgments on the writer but merely report features for re-examination. At least two programs, QUILL and THE WRITING WORKSHOP, also expedite peer review and sharing in a non-threatening way.

Because of enormous interest in language analysis in the business world, we will see great advances in editing aids in the near future. True and reliable sentence parsing and punctuation checkers, for example, will soon add yet another dimension to computer aids for this final stage of writing.

APPENDIX B

Decision Guide for Technology in the Classroom

Questions:

1. What student population receives what instruction?

   At this time, ignore staffing and hardware/software resources and match up skills and grade levels on the sample matrix with your student needs.

A Sample Matrix

K through 12

	lower elementary						middle school			secondary			
	K	1	2	3	4	5	6	7	8	9	10	11	12
Skill Areas													
KEYBOARDING													
character location													
words													
sentences													
paragraphs													
OPERATION OF A WORD PROCESSOR													
commands													
edit/print features													
COMPOSING:													
poetry													
prose:													
sentences													
paragraphs													
linked paragraphs (stories, themes, etc.)													

If staffing and hardware/software resources are available for all students at all grade levels, you may wish to consider using the computer to teach all the skills listed and go to number 3.

If resources are limited, assume that some of the above skills will be taught apart from the computer.

2. Assuming that all skills cannot be taught to all students in the same school year, prioritize the skills needed in order of dependence on access to a computer.

The results of the matrix indicate a. what skills are to be taught at which grade levels and b. which skills are to be regarded as computer-dependent.

3. What is the total number of students to receive instruction via computer?

4. To determine an appropriate number of computers to deliver instruction, consider

a. VARIOUS MODES OF USE:

individual use with one student operating the computer at a time

small group use with two or more students sharing a computer

large group use with a teacher or student using the computer to demonstrate to the class

adjunct use with computer(s) located in a "commons" area and accessed intermittently

and, consider

b. the length of computer time appropriate to the skill and grade level. Is a skill to be introduced, maintained, or expanded by means of the computer?

The results of considering modes of use and the length of computer time appropriate for presenting a skill at a specific grade level should approximate the number of computer hours needed for teaching to a specific skill.

5. _____ computer hours (skills) divided by _____ number of students

gives each student

_____ hours of computer time per (day) (week) (month) (year)

Integrating

6. How can the number of hours of computer time desired for each student be integrated into the curriculum?

Do the number of hours needed fit within the time allowed for language arts?

Should they?

7. If not, can some skills to be taught occupy time in some other area of the curriulum?

For example, can keyboarding be taught as keyboarding during mathematics or by using a software package that combines learning the keyboard with math games?

Can using the computer to work with editing commands and composing of sentences take place in social studies? For example some students can enter questions and SAVE them under other students' names. Students "named" can LOAD the file of questions related to a social studies area, answer the questions, and SAVE them. The two groups can come together at the computer to edit and print their files.

Printers

A printer does not need to be attached to each computer. Word processing programs, which require a data diskette for saving files, allow for diskettes to be removed from the host computer and taken to a computer that has a printer attached. Ratios of computers to printers vary greatly. Some laboratories have one printer for each computer. Others have numbers of computers with just one printer. Still others depend on the printer in the administrator's office for producing copy.

Word Processing Software

Word processing programs are available for every major computer as are packages which teach about word processing and incorporate activities.

Staff Training

Attitude and Apptitude

Teachers do not have to be experts with the keyboard to facilitate word processing. They can acquire skill and build their expertise along with that of their students. Teacher attitude toward word processing is a far more significant motivator for inspiring students than flying fingers. Some teachers and students are sufficiently interested in using a word processor that they persist by "hunt and peck." A consistent effort at teaching efficient keyboarding skills, however, is highly recommended.

Answering the above questions may point an initial direction to take in integrating composing into the curriculum. After the initial steps are in place, journal writing, writing across the curriculum, older-younger student writing teams, and other proven approaches for advancing composing are stepping stones—all of which can utilitze computers.